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ABSTRACT

This study sought to separate the effect of concentrated poverty on students' academic achievement and to develop a simple method for demonstrating that effect. The study was conducted in a midwestern urban school district with characteristics particularly suitable for answering these questions. It used two years worth of data on elementary school students in the district and concentrated on two outcome variables, standardized test scores and absenteeism. In both years, the district had more than 20,000 students, of whom about 55% were eligible for free lunch. Neighborhoods were classified into five broad economic bands according to the percentage of students living there who received free or reduced price lunch. When compared to students at the same economic level (free lunch, reduced-price lunch, no subsidy), students from the more affluent neighborhoods had consistently higher test scores and lower absenteeism than those from poorer areas of the city. The paper concludes with a discussion of some implications for public policy and directions for future research. (Contains 6 tables, 2 figures, and 14 references.) (SLD)

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ED 421 573

# Does It Matter Where Poor Kids Live?
# A Look at Concentrated Poverty and Achievement

A paper presented at the annual meeting of the
American Educational Research Association
San Diego, California
April 13-17, 1998

by

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Abstract

Poverty has long been recognized as a contributing factor in low academic achievement. Prevalence of poverty in a students' surroundings seems to compound the effects of poverty itself. This study sought both to identify the separate effect of concentrated poverty and to develop a simple method for demonstrating that effect. The study was conducted in the natural setting of a midwestern urban school district whose characteristics were particularly suitable for answering these questions. It used two years' worth of data on elementary school students in the district and concentrated on two outcome variables, standardized test scores and absenteeism. Neighborhoods were classified into five broad economic bands according to the percentage of students living there who received free or reduced price lunch. When compared to students at the same economic level (free lunch, reduced-price lunch, no subsidy), students from the more affluent neighborhoods had consistently higher test scores and lower absenteeism than those from poorer areas of the city. This paper concludes with a discussion of some implications for public policy and directions for future research.

## Background

Poverty has long been recognized as a contributing factor in low academic achievement. This has been shown so often that it is now an unquestioned assumption behind such programs as Title 1 and Head Start. Many urban school districts routinely report data disaggregated by students' free lunch status and researchers such as Bracey (1991 and following) and Berliner and Biddle (1995) often cite the increase in poverty as a counter-argument to claims that the public schools are in a state of crisis.

The fact that poverty has a profound effect on achievement has been well established. The mechanisms that produce this effect are less clear. Some authors speak of the lack of academic enrichment in poor families (Taylor and Wang, 1997). Others cite poor nutrition, both pre-natal and in early childhood (House Committee on Education and Labor, 1994). Others focus on education being pushed aside by the stresses of meeting basic needs. Still others speak more generally of a cycle of low expectations in multi-generational poor families (Taylor and Wang, 1997).

Recently, some public policy researchers have begun to look at concentration of poverty, rather than poverty itself, as the culprit. Studies dating back to the Coleman Report (1966) have looked at concentration of poverty. Often, however, they have viewed the concentration of poverty as simply a cumulative effect of the poverty of individual students (Chou & Coulton, 1990). In a 1992 study, Anderson et al suggested that poor children who attend relatively affluent schools have fewer problems and fewer risk characteristics than those attending schools filled with other poor children. This showed an effect that was more than the simple cumulative effect of individual students' poverty levels. However, this study, like those that had gone before, did not attempt to distinguish the poverty level of the student's school from the poverty level of the neighborhood where that student lives. Indeed, in urban areas with large geographic areas of concentrated poverty, such a distinction is often not possible, as students are unlikely to attend schools in areas that are much different economically from their homes.

The aftermath of the Gautreaux v. Chicago Housing Authority (1969) lawsuit provided a *de facto* experiment into the effect of the neighborhood economic level on student achievement. As a result of this suit, a large area of public housing was broken up, with residents being relocated either to other poor urban areas or to working class and lower middle

class areas in the surrounding communities. Assignments were made as spaces became available, so placement of families in neighborhoods was essentially random. In a long-term follow-up study, the students in the higher poverty neighborhoods were not doing as well in school as those located in less stressed neighborhoods (Rosenbaum et al, 1987, 1988). However it could be argued that other concerns, such as reductions in crime and increased availability of work, led to the improved achievement. Indeed, those were the concerns which motivated the dispersal in the first place.

Ellen and Turner (1997) recently reviewed the literature on the role that neighborhood conditions play in shaping individual outcomes in several realms. They cite a wide array of studies showing that conditions ranging from income levels to unemployment to housing types influence many outcomes for individuals, including educational success, but caution that the causal mechanisms have not been established. Many of the studies that they cite reflect the inextricable intertwining of race and poverty in American society, but Garner and Raudenbush (1991) found very similar results in a study of a much more homogeneous population in Scotland. Working from a legal and public policy perspective, powell (1996) uses these studies to argue that school desegregation, though necessary, is not sufficient to reduce achievement gaps and that deeper societal issues must be addressed.

## Statement of the Problem

The current study dealt with two separate challenges. First, it sought to separate the influence of the individual student's poverty from the influence of the concentration of poverty in the student's neighborhood. Second, it developed a method that would result in findings that would be comprehensible to the average school district patron.

To date, the study has examined two dependent variables, namely standardized test scores and student absenteeism. It has further been restricted to elementary and middle school students (through Grade 8).

### The setting

The school district in the current study has characteristics which allow an examination of the effects of concentrated poverty in a natural setting. Although district-wide over 60 percent of students receive free or reduced-price lunch, there are substantial areas where fewer than 20 percent of students receive lunch subsidies. Areas of concentrated poverty are spread throughout the city and are often only a few blocks from much more affluent areas. The

district is racially diverse, with about 40 percent Caucasian, 27 percent Asian (mostly Hmong immigrants from Laos), 24 percent African American, 7 percent Hispanic and 2 percent American Indian. Finally, a strong school choice program has resulted in over 60 percent of the students attending a school other than their neighborhood school, so children from different neighborhoods are dispersed throughout the system.

## Procedures

### Sample

The study was conducted using archival data from all students in the district, Grades 2 through 8, from the 1995-96 and 1996-97 school years. Some demographic characteristics of the students are shown in Table 1.

### Method

The variables used in this study were the following:

Test scores – results of district-wide standardized testing (**Reading**, **Math** and **Basic Battery**)

**Absenteeism** – percentage of days absent (available for 1995-96 school year only)

Poverty – child's eligibility for free or reduced-price lunch (**F/R lunch**)

Concentration – percent of students living in each census block group receiving F/R lunch (**F/RL%**)

**LEP** status – whether or not the student has received services for Limited English Proficiency

**Special Education** status – whether or not the student receives Special Education services

**Race** – state-defined categories of Caucasian, Asian, African-American, Hispanic or American Indian

Initial efforts to separate the two effects (poverty vs. its concentration) used multiple regression. Specifically, predictor variables were entered through stepwise regression until new variables added no more than one percent to the explained variance. This approach was preferable to one based on significance testing because the statistical power resulting from such a large sample will produce statistical significance for trivial effect sizes.

The regression analyses met with problems of multicollinearity, as the two primary predictor variables (F/R lunch and F/RL%) are highly intercorrelated. Specifically, 80 percent of poor students live in areas of 60 percent F/R lunch or higher. These 80 percent will have an overwhelming influence on the regression weights, potentially masking the neighborhood

effect. These two predictor variables were also highly correlated with race and LEP status, so the inclusion of the latter two variables added little to the explained variance.

Separating the effects in a way that would allow clear presentation required a more simplistic methodology. Neighborhoods were classified into five economic bands, labelled Extreme Poverty (80-100% F/R lunch), Concentrated Poverty (60-80% F/R lunch), Moderate Poverty (40-60% F/R lunch), Lower Poverty (20-40% F/R lunch) and Affluent (0-20% F/R lunch). Table 2 shows the distribution of students by neighborhood economic level. We then compared test score distributions and absenteeism patterns for the three categories of students (free lunch, reduced price lunch and no subsidy) living in each of the five neighborhood types.

Limited English Proficient students and Special Education students were not spread proportionately across neighborhood types. Either of these factors might also explain low test scores, so the above analyses were repeated with LEP and Special Education students removed. Finally, we conducted separate analyses of absenteeism by race within F/R lunch and F/RL%.

Table 1. Characteristics of Students in the Study

| | 1995-96 School Year | 1996-97 School Year |
|---|---|---|
| Total number | 21,465 | 22,063 |
| Eligible for free lunch | 55% | 56% |
| Eligible for reduced price lunch | 8% | 8% |
| Percent Caucasian | 46% | 42% |
| Percent Asian | 26% | 27% |
| Percent African American | 21% | 22% |
| Percent Hispanic | 6% | 7% |
| Percent American Indian | 1% | 2% |
| Limited English Proficient | 25% | 25% |
| Receiving Special Education Service | 11% | 11% |

Table 2. Distribution of Students Within Neighborhood Economic Levels

1995-96 Sample

| Neighborhood Economic Level | Free Lunch | Reduced Price Lunch | No Lunch Subsidy | Total |
|---|---|---|---|---|
| Extreme Poverty (>80% free/reduced) | 4732 | 337 | 422 | 5491 |
| Concentrated Poverty (60-80% free/reduced) | 4171 | 560 | 1469 | 6200 |
| Moderate Poverty (40-60% free/reduced) | 1449 | 331 | 1348 | 3128 |
| Lower Poverty (20-40% free/reduced) | 598 | 200 | 1492 | 2290 |
| Affluent (<20% free/reduced) | 189 | 62 | 2183 | 2434 |

Students not matched to neighborhoods – 1922

1996-97 Sample

| Neighborhood Economic Level | Free Lunch | Reduced Price Lunch | No Lunch Subsidy | Total |
|---|---|---|---|---|
| Extreme Poverty (>80% free/reduced) | 5815 | 416 | 596 | 3827 |
| Concentrated Poverty (60-80% free/reduced) | 3850 | 617 | 1404 | 5871 |
| Moderate Poverty (40-60% free/reduced) | 1264 | 344 | 1410 | 3018 |
| Lower Poverty (20-40% free/reduced) | 444 | 162 | 1344 | 1950 |
| Affluent (<20% free/reduced) | 140 | 48 | 2098 | 2286 |

Students not matched to neighborhoods – 2111

## Findings and Conclusions

### Results of Analyses

In the regression analyses of test scores, the first and second variables to enter the equation were always F/R lunch and F/RL%, although the order of their entry varied. The first variable into the equation explained 17 to 24 percent of variance, depending on the test, while the second variable added 4 to 6 percent to the explained variance. The findings for Reading and Mathematics tests for each year are presented in Table 3.

The analysis of test scores by neighborhood type yielded two primary results. First, at each level, the free lunch group scored the lowest, the reduced-price lunch group scored better, and the non-eligible group scored the highest. These differences ranged from 1.2 to 1.7 stanines. The second finding is that all groups (free lunch, reduced-price lunch, and non-eligible) showed a steady decline in test scores from the Affluent neighborhoods to those of Extreme Poverty. These declines ranged from 1.3 to 2 stanines. A subsidiary finding was that the gap between free and non-eligible students decreased as the economic level of the neighborhood declined. In other words, the least difference in test scores is found in the poorest neighborhoods. When LEP and Special Education students were removed from the sample, scores rose across the board, but the magnitude of differences remained approximately the same.

Results of the analyses of test scores are presented in Tables 4 and 5. Analyses of Basic Battery test scores for the two years are presented graphically in Figures 1 and 2.

Table 3. Results of Multiple Regression Analyses

Dependent variable – Reading, 1995-96

| Independent variables in order of entry | $R^2$ after entry | Addition to explained variance | *p* | Final beta weight |
|---|---|---|---|---|
| F/RL % | .24 | 24% | <.001 | -.267 |
| F/R lunch | .30 | 6% | <.001 | -.247 |
| Special Education status | .34 | 4% | <.001 | -.209 |
| Race (White/student of color) | .35 | 1% | <.001 | -.148 |

Dependent variable – Mathematics, 1995-96

| Independent variables in order of entry | $R^2$ after entry | Addition to explained variance | *p* | Final beta weight |
|---|---|---|---|---|
| F/R lunch | .17 | 17% | <.001 | -.228 |
| F/RL % | .22 | 5% | <.001 | -.224 |
| Special Education status | .26 | 4% | <.001 | -.212 |
| Race (White/student of color) | .27 | 1% | <.001 | -.105 |

Dependent variable – Reading, 1996-97

| Independent variables in order of entry | $R^2$ after entry | Addition to explained variance | *p* | Final beta weight |
|---|---|---|---|---|
| F/RL % | .24 | 24% | <.001 | -.264 |
| F/R lunch | .30 | 6% | <.001 | -.250 |
| Special Education status | .33 | 3% | <.001 | -.181 |
| Race | .34 | 1% | <.001 | -.152 |

Dependent variable – Mathematics, 1996-97

| Independent variables in order of entry | $R^2$ after entry | Addition to explained variance | *p* | Final beta weight |
|---|---|---|---|---|
| F/R lunch | .17 | 17% | <.001 | -.224 |
| F/RL % | .21 | 4% | <.001 | -.220 |
| Special Education status | .24 | 3% | <.001 | -.181 |
| Race | .25 | 1% | <.001 | -.111 |

Table 4. Test Results for 1995-96 by Students' Economic Status and Neighborhood Type

| Students' status | Neighborhood Type: Extreme Poverty | Concentrated Poverty | Moderate Poverty | Lower Poverty | Affluent | Total |
|---|---|---|---|---|---|---|
| **Reading Test** | | | | | | |
| Free Lunch | 3.25 | 3.49 | 3.73 | 4.21 | 4.67 | 3.50 |
| *without LEP, SpecEd* | *3.57* | *3.84* | *4.06* | *4.61* | *5.14* | *3.91* |
| Reduced Lunch | 3.91 | 4.17 | 4.50 | 5.33 | 5.29 | 4.43 |
| *without LEP, SpecEd* | *4.20* | *4.59* | *4.77* | *5.77* | *5.59* | *4.85* |
| No Subsidy | 4.52 | 4.95 | 5.58 | 6.02 | 6.74 | 5.83 |
| *without LEP, SpecEd* | *4.81* | *5.23* | *5.81* | *6.22* | *6.88* | *6.07* |
| Total | 3.39 | 3.90 | 4.61 | 5.49 | 6.55 | 4.44 |
| *without LEP, SpecEd* | *3.78* | *4.33* | *5.04* | *5.86* | *6.74* | *5.05* |
| **Mathematics Test** | | | | | | |
| Free Lunch | 3.68 | 3.73 | 3.93 | 4.43 | 4.62 | 3.79 |
| *without LEP, SpecEd* | *3.65* | *3.88* | *4.07* | *4.65* | *4.98* | *3.93* |
| Reduced Lunch | 4.20 | 4.28 | 4.74 | 5.11 | 5.30 | 4.55 |
| *without LEP, SpecEd* | *4.27* | *4.62* | *4.91* | *5.39* | *5.49* | *4.84* |
| No Subsidy | 4.61 | 4.99 | 5.52 | 5.98 | 6.62 | 5.79 |
| *without LEP, SpecEd* | *4.84* | *5.19* | *5.70* | *6.19* | *6.75* | *6.00* |
| Total | 3.78 | 4.08 | 4.70 | 5.50 | 6.43 | 4.59 |
| *without LEP, SpecEd* | *3.85* | *4.34* | *4.99* | *5.82* | *6.61* | *5.02* |
| **Basic Test Battery** | | | | | | |
| Free Lunch | 3.30 | 3.49 | 3.74 | 4.27 | 4.68 | 3.52 |
| *without LEP, SpecEd* | *3.52* | *3.77* | *4.02* | *4.61* | *5.16* | *3.84* |
| Reduced Lunch | 3.93 | 4.19 | 4.59 | 5.26 | 5.39 | 4.45 |
| *without LEP, SpecEd* | *4.15* | *4.61* | *4.82* | *5.66* | *5.66* | *4.85* |
| No Subsidy | 4.52 | 4.97 | 5.61 | 6.08 | 6.83 | 5.88 |
| *without LEP, SpecEd* | *4.80* | *5.23* | *5.83* | *6.30* | *6.98* | *6.13* |
| Total | 3.43 | 3.91 | 4.64 | 5.54 | 6.63 | 4.48 |
| *without LEP, SpecEd* | *3.73* | *4.30* | *5.04* | *5.92* | *6.84* | *5.06* |

Note: All scores shown are mean stanines for the group in question.

Table 5. Test Results for 1996-97 by Students' Economic Status and Neighborhood Type

| Students' status | Neighborhood Type: Extreme Poverty | Concentrated Poverty | Moderate Poverty | Lower Poverty | Affluent | Total |
|---|---|---|---|---|---|---|
| **Reading Test** | | | | | | |
| Free Lunch | 3.31 | 3.59 | 3.90 | 4.11 | 4.54 | 3.58 |
| *without LEP, SpecEd* | *3.50* | *3.82* | *4.25* | *4.64* | *4.91* | *3.82* |
| Reduced Lunch | 4.09 | 4.27 | 4.60 | 5.20 | 5.75 | 4.51 |
| *without LEP, SpecEd* | *4.43* | *4.63* | *5.00* | *5.60* | *6.10* | *4.88* |
| No Subsidy | 4.58 | 5.10 | 5.64 | 6.23 | 6.91 | 5.91 |
| *without LEP, SpecEd* | *4.83* | *5.35* | *5.90* | *6.36* | *7.00* | *6.14* |
| Total | 3.47 | 4.03 | 4.80 | 5.66 | 6.74 | 4.47 |
| *without LEP, SpecEd* | *3.75* | *4.36* | *5.24* | *6.01* | *6.88* | *4.99* |
| **Mathematics Test** | | | | | | |
| Free Lunch | 3.81 | 3.91 | 4.23 | 4.28 | 4.69 | 3.90 |
| *without LEP, SpecEd* | *3.70* | *4.01* | *4.33* | *4.67* | *4.98* | *3.98* |
| Reduced Lunch | 4.44 | 4.47 | 5.01 | 5.30 | 5.50 | 4.79 |
| *without LEP, SpecEd* | *4.59* | *4.76* | *5.28* | *5.60* | *5.90* | *5.03* |
| No Subsidy | 4.71 | 5.21 | 5.75 | 6.26 | 6.87 | 5.97 |
| *without LEP, SpecEd* | *4.84* | *5.42* | *5.98* | *6.39* | *6.95* | *6.18* |
| Total | 3.93 | 4.28 | 5.03 | 5.73 | 6.71 | 4.73 |
| *without LEP, SpecEd* | *3.91* | *4.50* | *5.35* | *6.03* | *6.83* | *5.09* |
| **Basic Test Battery** | | | | | | |
| Free Lunch | 3.40 | 3.62 | 3.96 | 4.12 | 4.66 | 3.61 |
| *without LEP, SpecEd* | *3.47* | *3.82* | *4.23* | *4.58* | *5.07* | *3.80* |
| Reduced Lunch | 4.19 | 4.29 | 4.77 | 5.24 | 5.93 | 4.57 |
| *without LEP, SpecEd* | *4.44* | *4.61* | *5.14* | *5.64* | *6.32* | *4.93* |
| No Subsidy | 4.67 | 5.18 | 5.75 | 6.33 | 7.07 | 6.03 |
| *without LEP, SpecEd* | *4.90* | *5.44* | *6.01* | *6.48* | *7.17* | *6.28* |
| Total | 3.56 | 4.07 | 4.90 | 5.75 | 6.90 | 4.56 |
| *without LEP, SpecEd* | *3.73* | *4.38* | *5.32* | *6.09* | *7.05* | *5.06* |

Note: All scores shown are mean stanines for the group in question.

**Figure 1. Basic Battery Test Scores by Student's Lunch Status and Neighborhood Economic Level – 1995-96**

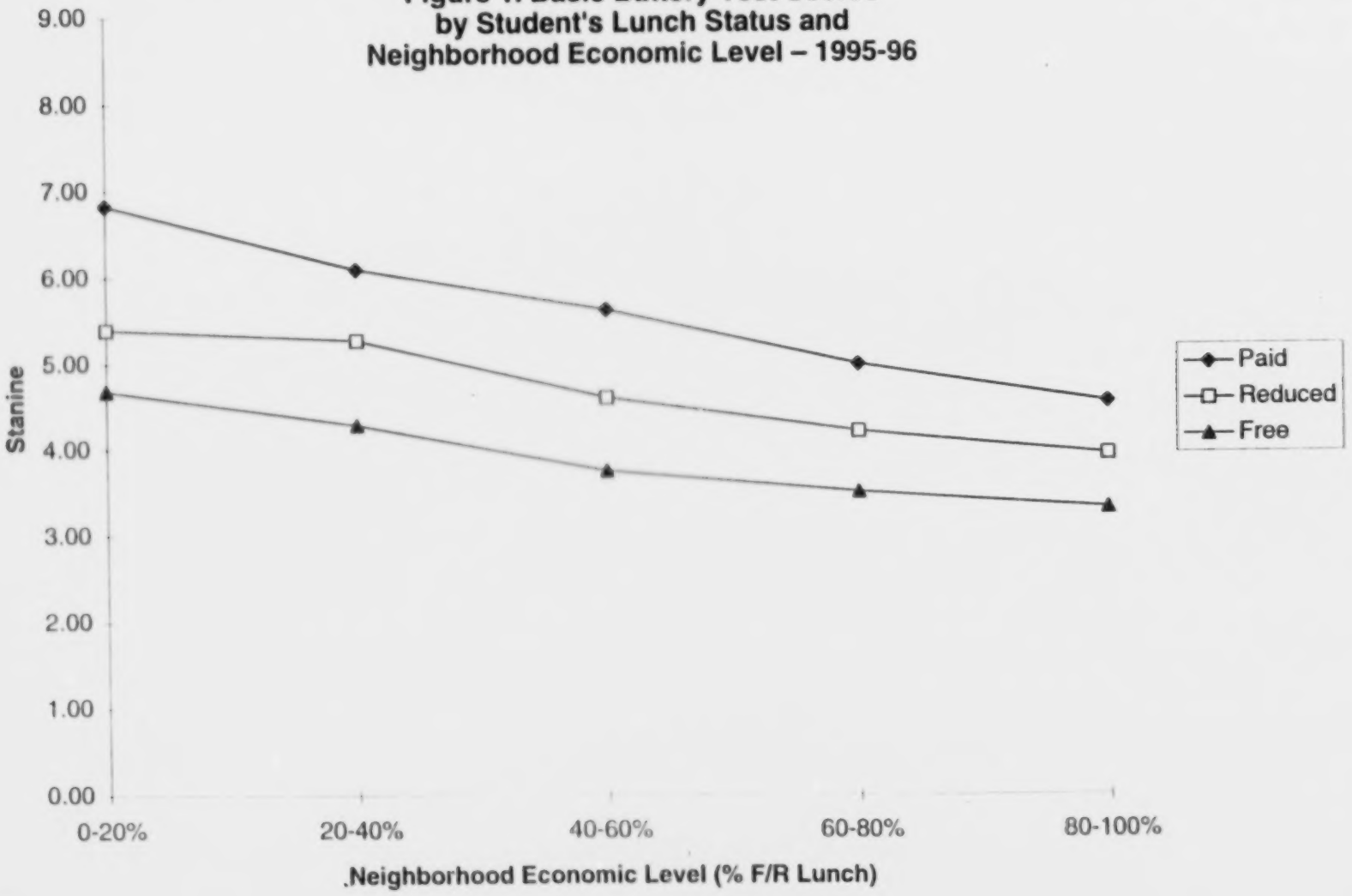
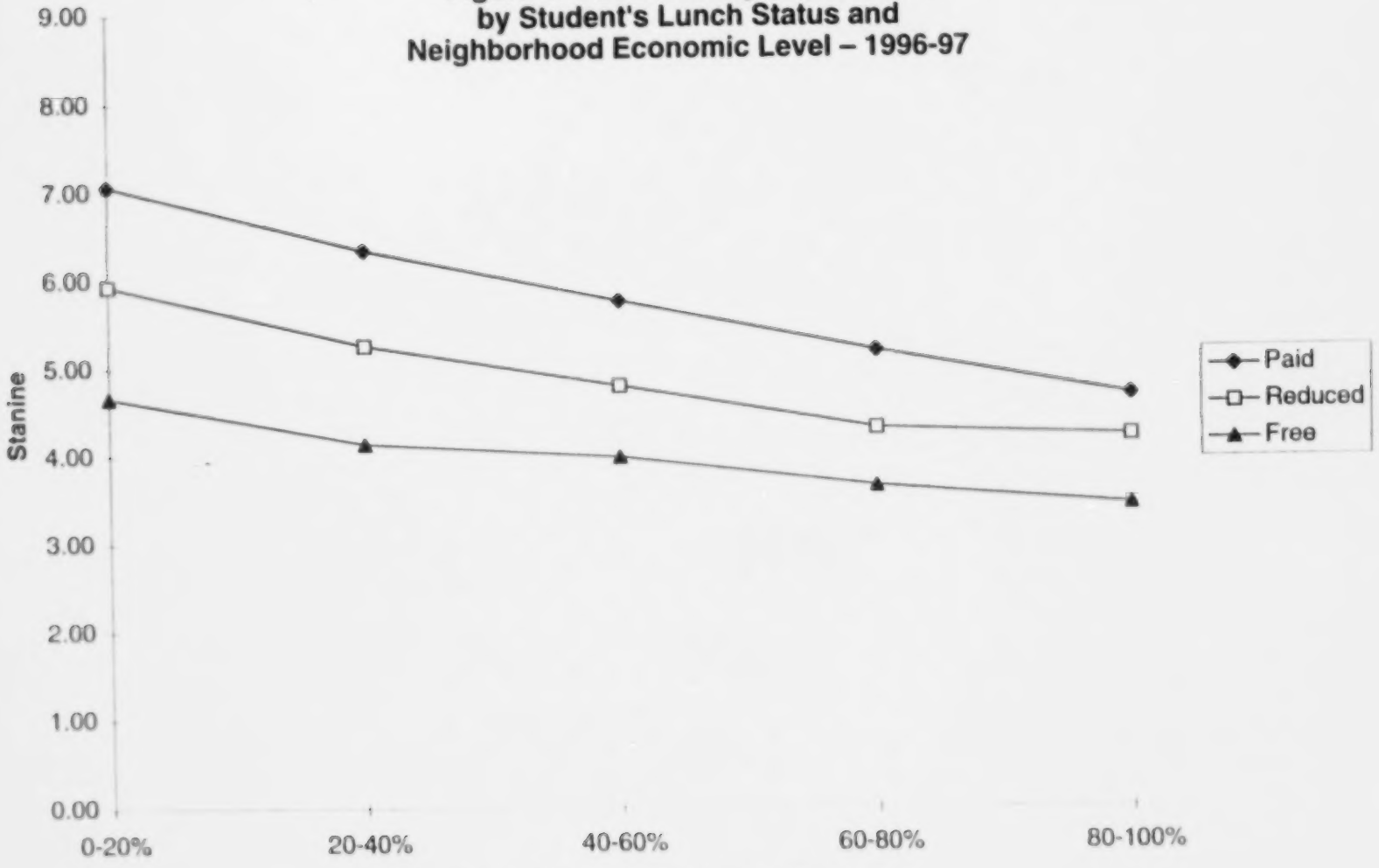


**Figure 2. Basic Battery Test Scores by Student's Lunch Status and Neighborhood Economic Level – 1996-97**



The analyses of absenteeism were complicated by the fact that Asian students in this district show a completely different pattern than other groups. For all other groups, absenteeism is highest among free lunch students and lowest among non-eligible students. Furthermore, absenteeism increases in all groups as the poverty level of the neighborhood increases. These results are quite consistent with the test score analyses. However, for the Asian students, there is no appreciable increase in absenteeism as concentration of poverty increases. Furthermore, absenteeism of Asian students is higher among non-eligible students and lower among students receiving either free or reduced-price lunch. Table 6 shows results of the analysis of absenteeism.

Table 6. Absenteeism by Students' Economic Status and Neighborhood Type within Race

| Students' status | Neighborhood Type: Extreme Poverty | Concentrated Poverty | Moderate Poverty | Lower Poverty | Affluent | Total |
|---|---|---|---|---|---|---|
| **Caucasian Students** | | | | | | |
| Free Lunch | 10.49 | 9.47 | 8.65 | 8.09 | 8.06 | 9.22 |
| Reduced Lunch | 8.38 | 6.45 | 7.18 | 5.29 | 4.97 | 6.60 |
| No Subsidy | 6.07 | 6.14 | 5.09 | 4.56 | 4.39 | 4.97 |
| **African American Students** | | | | | | |
| Free Lunch | 11.37 | 10.73 | 9.69 | 8.97 | 7.78 | 10.76 |
| Reduced Lunch | 6.14 | 6.25 | 3.99 | 6.07 | 5.00 | 6.04 |
| No Subsidy | 9.02 | 6.81 | 5.59 | 5.45 | 4.25 | 6.48 |
| **Hispanic Students** | | | | | | |
| Free Lunch | 11.29 | 10.52 | 11.22 | 9.98 | 8.30 | 10.85 |
| Reduced Lunch | 8.52 | 9.58 | 5.00 | ** | ** | 8.48 |
| No Subsidy | 7.28 | 7.02 | 7.52 | 6.33 | 4.10 | 6.73 |
| **Asian Students** | | | | | | |
| Free Lunch | 3.86 | 3.72 | 3.60 | 3.74 | 3.39 | 3.81 |
| Reduced Lunch | 3.27 | 3.53 | 2.89 | 3.79 | ** | 3.39 |
| No Subsidy | 5.49 | 5.28 | 3.35 | 3.64 | 3.40 | 4.05 |
| **American Indian Students** | | | | | | |
| Free Lunch | 15.50 | 12.41 | 15.60 | ** | ** | 14.22 |
| Reduced Lunch | ** | 16.87 | ** | ** | ** | 11.14 |
| No Subsidy | ** | 10.27 | 9.52 | 5.25 | 6.24 | 8.80 |

** fewer than 10 cases in this cell, no data reported.

Note: Data in the table indicate percentage of absenteeism for the group in question.

Conclusions

Two issues were both successfully addressed in this study. First, the study demonstrated effects of concentration of poverty that go beyond those of poverty itself. Second, it identified a simple, but effective methodology to demonstrate those effects.

The methods used in this study can be applied in any school district with an accurate database that includes student addresses and student lunch status. Commercially available software can map students into defined neighborhood boundaries such as block groups, city planning boundaries or school attendance areas. Reporting data by neighborhood poverty levels points out achievement discrepancies that need to be addressed, yet it avoids the legal and political pitfalls of disaggregating according to the individual student's F/R lunch status.

This methodology is not universally applicable, however, as the anomaly in the Asian students' attendance has shown. These methods probably would also not work in all communities. For instance, in a university town the areas with graduate student housing would surely be among the poorest areas, yet one would expect children from those areas to achieve rather well.

This study demonstrated a separate effect of poverty itself, so it does not discredit any of our assumptions about economic status and education, but broadens our view of how these effects occur. Differences traceable to the students' economic status alone were approximately equal to the differences traceable to the general economic environment in which they lived. Thus, this study reinforces the findings of the Rosenbaum studies, but it demonstrates this in a naturally-occuring setting. The demonstrable effect of concentration of poverty lends support to efforts to integrate poor urban neighborhoods with more affluent surrounding areas. It also has public policy implications for such questions as location of public housing.

Implications for Further Research

Clearly this study points to further research. The simplicity of the methodology provides a very direct way to demonstrate the effects of concentrated poverty to the public, but it prevents us from probing deeper into details. It shows a result, but provides very little insight into the mechanism that produces the result.

This study also does not suggest any intervention beyond that already examined in the Chicago studies. Short of such large-scale social engineering, what can be done by school

systems to deal with the combined effects of poverty and its concentration? A further study is under way in this district to examine concentrated poverty in the school versus concentrated poverty in the student's neighborhood. Again, the district provides a natural setting to examine the achievement of students from high-poverty neighborhoods when placed in lower-poverty schools.

To develop a more adequate theory will require a larger study using substantially more sophisticated statistical analyses. The variable F/RL% is a strong predictor, but we need to find a way to untangle its collinearity with the individual student's F/R lunch status. We also need to try to factor in the various effects of student mobility, second language status and concentrated poverty in the school versus concentrated poverty in the community. Structural equation models could be used to test hypotheses derived from the current study and other preliminary studies. Models derived from such studies could also be tested against data from other urban school districts. If we temporarily set aside the continuing challenge of making such models understandable to the public, a better understanding of causal relationships can surely lead to improved service delivery.

As often happens, some of the most intriguing possibilities for further research are found in the anomalies in the data. For instance, why does the achievement gap decrease as the economic level of the neighborhood declines? Does wide-spread poverty have a stultifying effect on all residents or is this simply a scaling flaw in the free/reduced lunch variable, whose three categories are essentially "poor", "broke" and "everybody else"? Why is the Asian attendance pattern the reverse of the other groups? Is this an immigrant phenomenon or are there more specific cultural roots? These and other questions await further study.

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